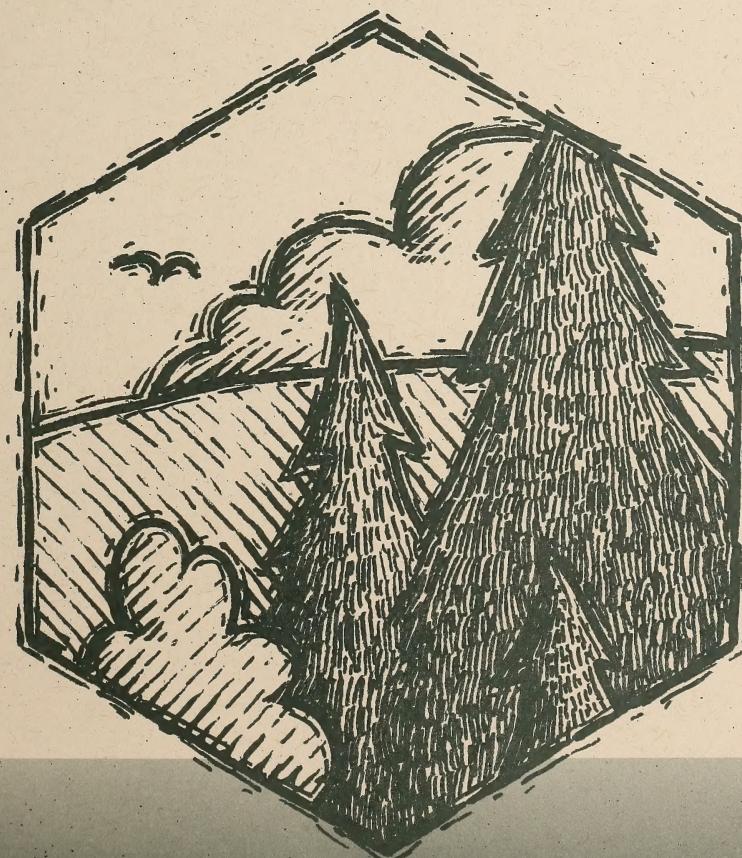


HOLMES CROSSING SANDHILLS

ECOLOGICAL RESERVE

Management Plan



Copies of this management plan may be obtained from:

Natural Resources Service
Administration Building, Barrhead
Box 4298, 5018-49A Street
Barrhead, AB
T7N 1A3
Phone 1-780-674-8236
Fax 1-780-674-8379

Alberta Environmental Protection
Natural Resources Service
Northern East Slopes Region, Stony Plain District
Stony Plain Provincial Building
4709 - 44 Ave,
Stony Plain, AB
T7Z 1N4
Phone 1-780-963-6131
Fax 1-780-963-4651

The Holmes Crossing Sandhill Ecological Reserve Management Plan is recommended for approval and implementation.

Date February 1999

*Jim Skarlicki, Regional Director
Northern East Slopes Region
Natural Resources Service*

Date Feb 10, 1999

*Mike Clifford, Area Manager
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Stony Plain, AB*

Date April 10, 1999

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The team responsible for preparation of the management plan included Kym Clifford, Ken Krasch and Mike Clifford, with help from many others. Jim Black, Northern Environments Landscape Architects LTD, prepared the Trail and Footpath Map.

Thank you to the many people who participated in the planning process, particularly the local people who through dedication and persistence have achieved protection for the Holmes Crossing Sandhills.

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<https://archive.org/details/holmescrossingsa00albe>

Approval Statement

The Holmes Crossing Sandhills Ecological Reserve Management Plan is the official policy of the Government of Alberta for the management of the reserve. The plan provides the direction for management of the reserve consistent with the provisions of the Wilderness Areas, Ecological Reserves and Natural Areas Act. Approval of this plan reflects the Government's commitment to protect the ecological resources of the reserve for present and future generations while providing compatible research, educational, recreational and tourism opportunities.

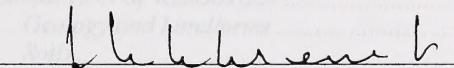


Date March 19, 1999

Morley Barrett
Assistant Deputy Minister
Natural Resources Service
Alberta Environmental Protection

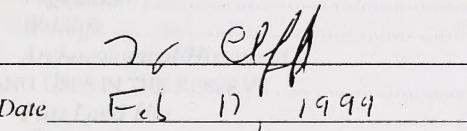
Endorsement

The Holmes Crossing Sandhills Ecological Reserve Management Plan is recommended for approval and implementation.



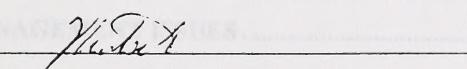
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Date April 16, 1999

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Barrhead District

The team responsible for preparation of the management plan included Kyle Clifford, Ken Kroetsch and Elaine Nepstad, with help from many others. Jim Black, Northern Environments Landscape Architects LTD., prepared the Trail and Facilities Map.

Thank you to the many people who participated in the planning process, particularly those local people who through dedication and persistence have achieved protection for the Holmes Crossing Sandhills.

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3.2 Purpose of the Plan

This chapter describes the purpose of the Holmes Crossing Sandhills Ecological Reserve Plan. It provides the overall direction for its protection and use. More specifically, the plan:

- describes the role of the reserve in Alberta's provincial parks network;
- describes the reserve;
- establishes objectives and management guidelines for protection, heritage, representative, and tourism recreation;
- reviews existing land use and coordination with other agencies, groups and individuals;
- identifies issues and challenges in the reserve; and
- outlines a implementation of the plan.

3.2.1 Support Values

Support values of the reserve are associated with the area landscape and include park, park reserve, major wetland, a rare fawn, and coastal rare or underrepresented plants (see Special Features Map on next page).

¹ A wetland is an area that is saturated by water for long periods of time, allowing for the growth of aquatic plants. Taken from 1997 Provincial Survey.

1. Introduction

Holmes Crossing Sandhills Ecological Reserve was established in 1997 to protect the transverse sand dunes that are the best representation of their kind in Canada. A forest cover of predominantly jack pine stabilizes the dunes.

The reserve is located on the south side of the Athabasca River southwest of the town of Fort Assiniboine. It covers 1982.65 hectares, about 20 square kilometers.

Its name comes from the local settlement of Holmes Crossing on the south side of the Athabasca River. This settlement was named after William Holmes, the ferryman at this site from 1906-1913.

1.1 Natural Values of the Reserve

Holmes Crossing Sandhills Ecological Reserve is a **special ecological reserve** because it protects a special feature – the sand dunes.

1.1.1 Core Value of the Reserve

The *transverse dunes* are the most unique feature of the reserve. These dunes are formed in wave-like ridges transverse to the prevailing wind direction, and are well preserved by stabilizing vegetation. Because of this cover the formations are difficult to observe at ground level, but easily identified in aerial photography. They are a special feature of national significance,¹ as they are the best representation of transverse dunes in Canada (David 1977).

1.1.2 Support Values

Support values of the reserve are associated with the dune landscape and include jack pine forests, sedge wetlands, a marl fen, and several rare or uncommon plants (see Special Features Map on next page).

Sedge wetlands occur intermittently between the transverse dunes, and are dominated by sedges and mosses. Sometimes black spruce, larch or willows occur. These wet meadows are representative of mineral wetlands, and are of local and regional significance.

Jack pine forests grow on the sandy soils found in the dunes. They are representative of the boreal forest and are of regional significance.

Marl fens are wetlands on calcium-rich soils. They are rare in this region. The marl fen in the northwest corner of the reserve is a special feature of regional significance.

Uncommon Plants (Nelson et al 1989)

Leather-leaf (*Chamaedaphne calyculata*), at the southern limit of its range, occurs in sedge meadows.

Carex franklinii is an uncommon dryland sedge found in dry meadow areas. In the ecological reserve it is typically found on the south slopes of dunes. All other occurrences in Alberta are along the northern cordillera.

Indian pipe (*Monotropa uniflora*), found in rich woods, is an uncommon species in Alberta.

1.2 Purpose of the Plan

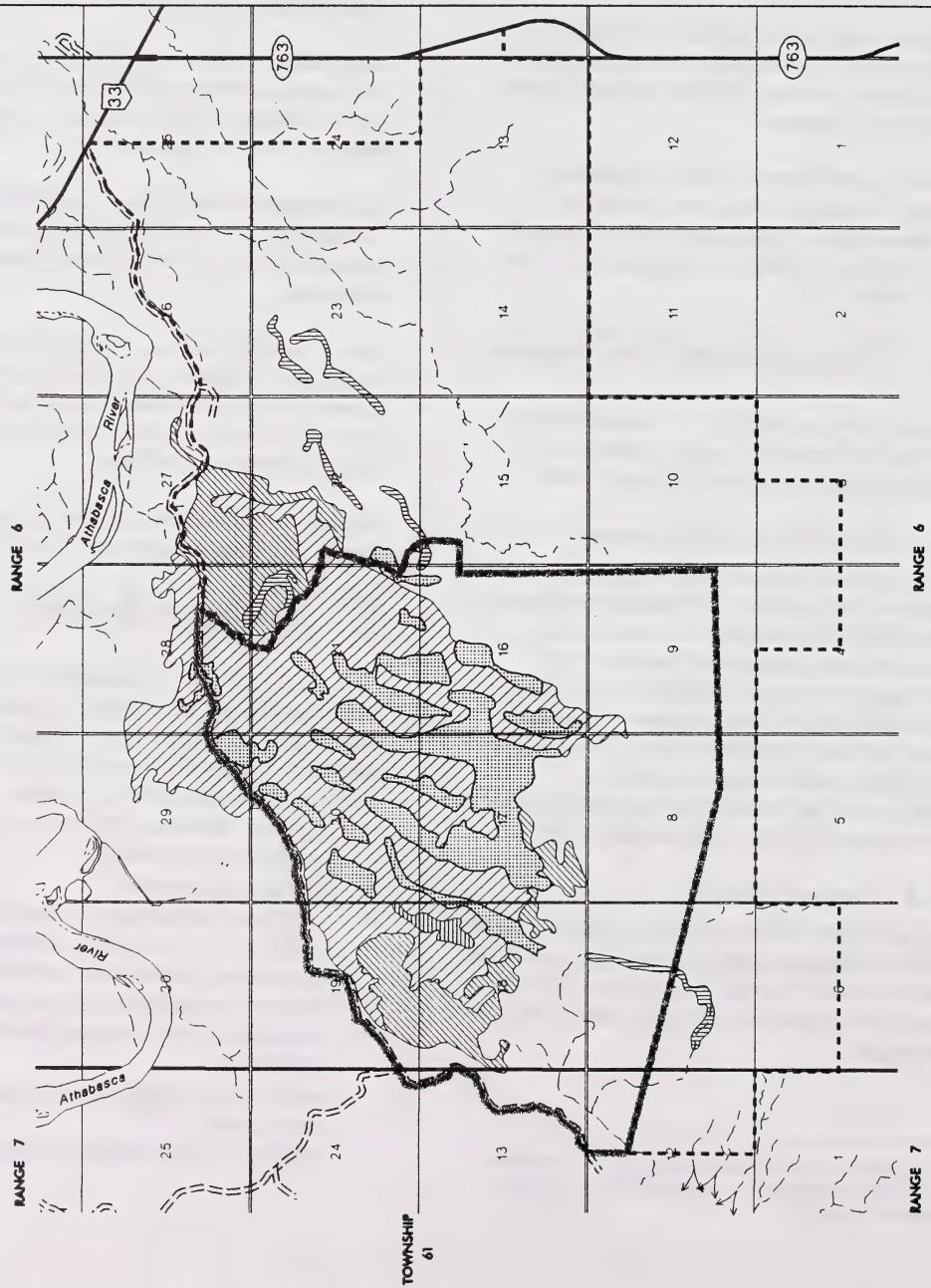
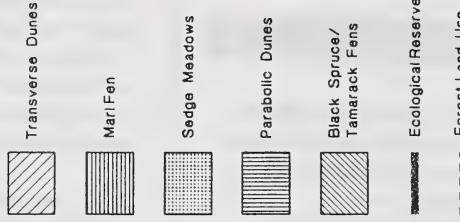
This plan is the policy of Alberta Environmental Protection for the management of the Holmes Crossing Sandhills Ecological Reserve. It provides the overall direction for its protection and use. More specifically, the plan:

- discusses the role of the reserve in Alberta's protected areas network;
- describes the reserve;
- establishes objectives and management guidelines for protection, heritage appreciation, and outdoor recreation;
- reviews surrounding land uses and coordination with other agencies, groups and individuals;
- discusses research and monitoring in the reserve and;
- outlines implementation of the plan.

¹ See Appendix A for definition of significance ratings and for representative/special features explanation. Taken from 1989 Biophysical Inventory.

**HOLMES CROSSING –
SANDHILLS
ECOLOGICAL RESERVE**

Special Features Map



1.3 History of Designation of Reserve

Local residents tried for many years to obtain protective status for the Holmes Crossing Sandhills area. A land use plan for the Athabasca Sandhills area was started in March 1978, but was postponed in 1980. In 1987 the local MLA, Ken Kowalski, asked that the public planning process be revived to address resource management issues in the area. During this time strong community support for preservation of the sandhills culminated in community groups recommending it as a candidate Natural Area.

In 1988 the Athabasca River Sandhills Local Integrated Resource Plan (LIRP) was initiated to resolve land use issues in the larger Athabasca Sandhills area, stretching east and west of Fort Assiniboine. Completed in 1993, the LIRP provided a framework for the management and use of public land and resources within the planning area.

A subsequent Access and Protection Plan (1997) identified five areas within the LIRP area. These five areas reconciled the demands of recreational users and the need to protect portions of land by providing a range of protection and recreation opportunities. The five areas are described briefly below. (See Access and Protection Plan Map on next page.)

1. The **Holmes Crossing Sandhills Ecological Reserve** provides the highest degree of protection. This area was zoned as Prime Protection in the LIRP to "preserve environmentally sensitive terrain and valuable aesthetic resources". This zoning recognized the extreme environmental sensitivity of the nationally significant sand dunes area and its biological diversity. The ecological reserve now protects these sand dunes, and allows only low impact activities on foot.

2. The adjacent **Holmes Crossing Forest Land Use Zone** has a lower degree of protection and permits recreation not allowed in the reserve, such as equestrian use, and snowmobiling in winter.

3. Farther east along the Athabasca River, **Vega Natural Area** is a small site that protects a section of the valley, and allows non-motorized activities.

4. The **Fort Assiniboine Sandhills Wildland Park** protects a large area of sand dunes, a variety of wetlands, and associated vegetation and wildlife. It provides opportunities for backcountry recreation, with minimal development. No motorized activities on trails are allowed, except for one snowmobile trail that connects to trails outside the park.

5. **Timeu Off-Highway Vehicle Recreation Area** was created primarily to allow for off-highway vehicle use.

1.4 Public Involvement

In May 1997, an implementation committee met to discuss a process for the development of management plans for the areas established in the Access and Protection Plan. The committee was composed of stakeholders who had been involved throughout the planning process for the Athabasca Sandhills area. The committee decided to hold a series of public meetings to discuss management strategies for each of the areas. A public meeting to discuss the management of Holmes Crossing Sandhills Ecological Reserve was held in Fort Assiniboine on August 13, 1997. The series of meetings was completed by the end of August 1997.

Subsequently, draft management plans were prepared by Natural Resources Service and sent to those who attended the public meetings and to the members of the implementation committee for review. Comments from this review were incorporated into the draft of the plan.

An open house was held on April 30, 1998 to give the general public an opportunity to review and comment on the plans.

When the public reviews were completed and comments from the public addressed, the plan was sent for approval to the Department of Environmental Protection.

ATHABASCA RIVER SANDHILLS ACCESS AND PROTECTION PLAN

Scale 1 : 276 000

Planning Area Boundary Private land

LAND DESIGNATIONS

WILDLAND PARK
FOREST LAND USE ZONE

VEGA NATURAL AREA

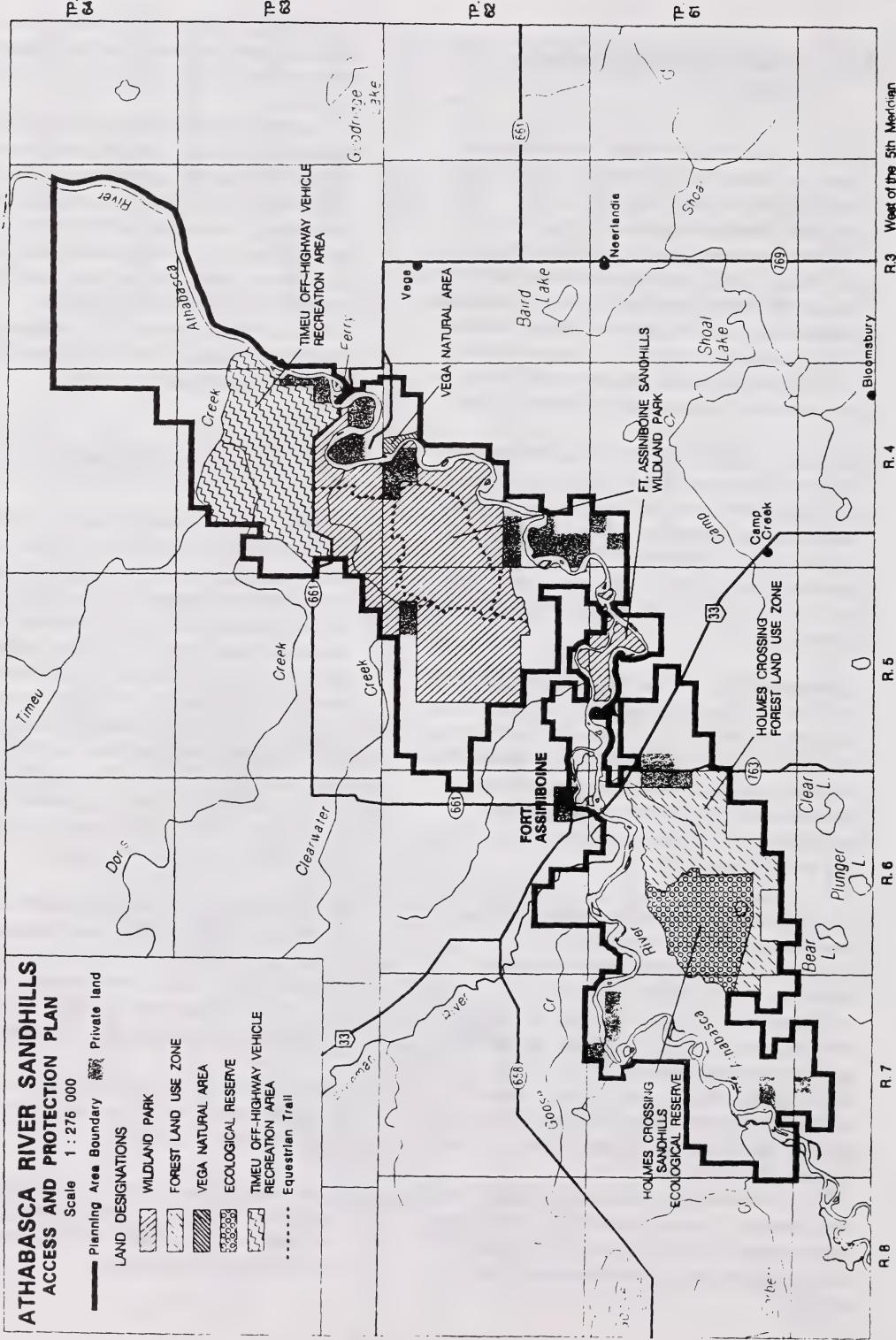
ECOLOGICAL RESERVE

TIMEU OFF-HIGHWAY VEHICLE
RECREATION AREA

Equestrian Trail

TIMEU OFF-HIGHWAY VEHICLE
RECREATION AREA

Equestrian Trail



2.0 Role in Alberta's Network of Protected Areas

2.1 Objectives

Four broad objectives are the cornerstones of Alberta's network of protected areas.

Preservation

To preserve and protect in perpetuity a system of representative, special and outstanding natural landscapes and features as well as landscape-related prehistoric, historic and cultural resources of Alberta.

Heritage Appreciation

To provide opportunities to explore, understand and appreciate the natural, historical and cultural heritage of Alberta, and to enhance public awareness of our natural environment and our relationship to it.

Outdoor Recreation

To provide a variety of intensive and dispersed outdoor recreation opportunities and related facilities and services.

Tourism/Economic Development

To encourage residents and visitors to discover and enjoy the natural, historical and cultural resources of the province through a variety of recreation opportunities, facilities and accommodation services.

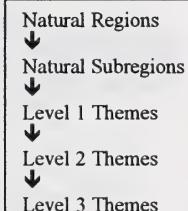
Each existing or potential protected area is assessed for its contribution to these objectives. Two tools aid this assessment: first, the Natural Regions Framework which identifies representation themes of a protected area, and second, legislative classification of the site.

2.2 Natural Regions Framework

The Alberta government is committed to protecting representative samples of Alberta's natural heritage. To help select which areas are the best samples the government has adopted a

framework based on natural features. This framework is a hierarchy of natural regions, subregions, and natural history themes. Natural regions provide the "big picture" of Alberta's landscapes, such as grasslands, mountains, and boreal forest. The subregions and natural history themes are subdivisions of the natural regions, and provide a more specific picture of smaller areas.

There are six Natural Regions in Alberta. Differences between these regions are readily apparent by their distinct landform features and vegetation. The six regions are Boreal Forest, Rocky Mountain, Foothills, Canadian Shield, Parkland and Grassland (see Natural Regions map).



Each of these Natural Regions has been divided into subregions based on criteria that vary depending on the Natural Region. For instance, the Foothills Natural Region has been divided into two subregions, based on differences in elevation and the differences in climate and vegetation which result. The Boreal Forest Natural Region, however, is divided into six subregions based on vegetation, geology and landforms. These subregions vary with the predominant forest cover, the topography (level, undulating, or hilly), and the mix of uplands and wetlands.

Subregions are further divided into Level 1, Level 2 and Level 3 Natural History themes. Level 1 themes are based on easily observed landforms, such as wetlands and valley/ridges.

Level 2 themes are more specific breakdowns of Level 1 themes. They refer to distinctive vegetation, habitat types or highly visible geological features (see Table 1)

Level 3 themes are finer breakdowns of Level 2 themes. They include specific features such as rare plants and animals, and specific bedrock and landform types, for instance transverse and parabolic sand dunes.

Because of their detail, themes are most useful for identifying the natural diversity within Alberta. Level 1 themes can usually be seen on aerial photography maps, while Level 2 and Level 3 themes require detailed biophysical studies. Analysis of these themes can determine which sites in Alberta would be the best examples of our natural heritage.

Holmes Crossing Ecological Reserve is in the Central Mixedwood Subregion of the Boreal Forest Natural Region. The chart above shows the Level 1 and Level 2 Natural History Themes represented in the reserve.

Table 1: Natural History Themes

Natural History Themes	
Holmes Crossing Sandhills Ecological Reserve	
Boreal Forest Natural Region	
Central Mixedwood Subregion	
Level 1 Natural History Themes	Level 2 Natural History Themes
Sandy Upland – Dune Field	Dunes Jack pine forest Recently burned (1944)
Valley/Ridge – Protected Slope	Mixedwood Deciduous forest
Valley-Ridge – Floor/Stream	White spruce Mixedwood Deciduous Muskeg stream
Wetland - Mineral	Marsh Swamp White spruce forest Black spruce forest Shrubland
Wetland – Organic	Bog Non-patterned fen Black spruce forest Tamarack forest Shrubland Graminoid (grasses)
Lake	Eutropic

2.3 Legislated Classification

The possible classifications of protected areas under Alberta legislation are ecological reserves, wilderness areas, wildland parks, provincial parks, natural areas, and provincial recreation areas. These classifications and their corresponding legislation are currently under review and may be revised in 1999.

These classifications differ in the contributions they make to the provincial objectives. For instance, ecological reserves contribute mostly to the preservation objective, and provincial recreation areas contribute mostly to the outdoor recreation objective.

Ecological reserves are established under the Wilderness Areas, Ecological Reserves and Natural Areas Act (1980). Under Section 3.1(1) of this act, a site may be designated as an ecological reserve for preservation for ecological purposes if it:

- is suitable for scientific research associated with the study of natural ecosystems;
- contains representative example of a natural ecosystem in Alberta;
- serves as an example of an ecosystem that has been modified by man and that offers an opportunity to study the recovery of the ecosystem from that modification;
- contains rare or endangered nature plants or animals that should be preserved; or
- contains unique or rare examples of natural biological or physical features.

Overall responsibility for ecological reserves lies with the Department of Environmental Protection, Natural Resources Service although reserves are often managed by another agency that is more closely connected to its field operations.

2.4 Role of Ecological Reserves

Ecological reserves are areas selected for their representative or special natural landscapes and features within the province.

Alberta

ENVIRONMENTAL PROTECTION

NATURAL REGIONS AND SUB-REGIONS OF ALBERTA

0 50 100km

BOREAL FOREST NATURAL REGION

- Central Mixedwood
- Dry Mixedwood
- Wetland Mixedwood
- Sub-Arctic
- Peace River Lowlands
- Boreal Highlands

ROCKY MOUNTAIN NATURAL REGION

- Alpine
- Sub-Alpine
- Montane

FOOTHILLS NATURAL REGION

- Upper Foothills
- Lower Foothills

CANADIAN SHIELD NATURAL REGION

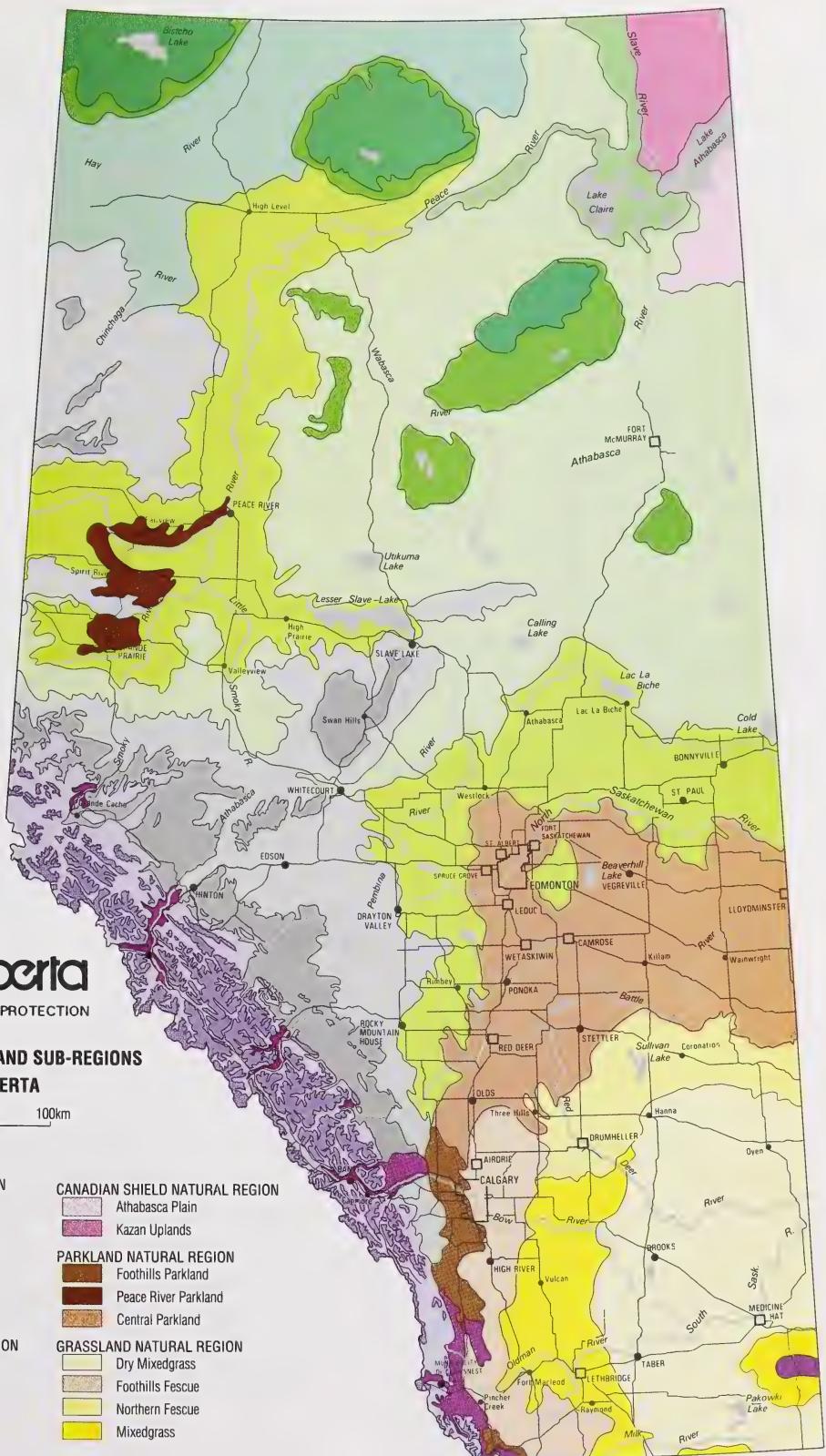
- Athabasca Plain
- Kazan Uplands

PARKLAND NATURAL REGION

- Foothills Parkland
- Peace River Parkland
- Central Parkland

GRASSLAND NATURAL REGION

- Dry Mixedgrass
- Foothills Fescue
- Northern Fescue
- Mixedgrass



The main purpose of ecological reserves is to contribute to the preservation objective. This contribution to protection includes:

- **protection** of our natural heritage, conservation of biological resources and promotion of onsite conservation of species and ecosystems over the long term.
- **scientific research** which will increase knowledge and understanding of natural ecosystems, which in turn can provide solutions to many resource management problems. Reserves also provide secure sites for both short and long term monitoring of environmental changes.
- **benchmarks** against which to measure the effectiveness of resource management practices in other parts of the province.
- **sources of genetic material** to assist in ensuring the perpetuation of gene pools.

Contributions to the other objectives are not a priority for ecological reserves. However, it is acknowledged that reserves are suitable for unstructured heritage appreciation and low impact outdoor recreation, as long as these uses are compatible with the overall protection objective.

2.5 ***Role of Holmes Crossing Sandhills Ecological Reserve***

Holmes Crossing Sandhills Ecological Reserve has been designated as an ecological reserve to:

- protect the sand dunes because they are a nationally significant natural landscape; and
- protect the diversity of its vegetation and wildlife which is representative of the boreal forest. This diversity is demonstrated by the reserve's representation of 21 Level 2 Natural History Themes of the Central Mixedwood Subregion of the Boreal Forest Natural Region.

The reserve will also protect gene pools, provide an area for scientific research, and can act as a benchmark by which to measure changes that take place outside the reserve.

The goal of Holmes Crossing Sandhills Ecological Reserve is to maintain for the long term the ecological integrity of the sand dunes and the associated vegetation and wildlife. The site may also provide opportunities for scientific research in an area with minimal human disturbance.

3.0 Overview

3.1 Access and Regional Setting

Holmes Crossing Sandhills Ecological Reserve is located on the south side of the Athabasca River just south of the hamlet of Fort Assiniboine, about 130 kilometers northwest of Edmonton. The reserve can be reached by a county road that roughly parallels the south shore of the Athabasca River west of Fort Assiniboine. This road can be accessed from Highway 33 just south of the bridge crossing the Athabasca River.

Agriculture is the major land use in the region. There are also a number of other land use activities including forestry, petroleum and natural gas exploration and development, and recreation. The dune/wetland complexes in the region have been popular for recreational activities such as horseback riding, camping, and off-highway vehicle use.

3.2 Boundary

The boundary of the reserve is delineated as follows:

West and north – the county road
East – the north part of the east boundary is the trail dividing the ecological reserve and Holmes Crossing Forest Land Use Zone. The south part of the east boundary is a cutline just to the west of the section line.
South – the cutline which, starting from the west, angles southeast, and then straight east.
See Appendix B for map and legal description of the reserve.

These boundaries were established through consultation with the public advisory committee and with the general public during the Access and Protection Plan planning process.

3.3 Description of Resources

3.3.1 Geology and Landforms

The Athabasca area is underlain mainly by clay-mixed sandstones and shales of the Wapiti Formation formed during the Upper Cretaceous period. Sandstones and calcareous shales formed at a later period overlie this formation along the Athabasca River near Fort Assiniboine.

During glacial times, continental ice sheets covered the area, depositing a layer of till. As the glacier retreated, meltwater lakes were formed and reformed in the area, depositing primarily silty clay sediments. These clays generally mantle the till deposit. At the same time, sands were deposited in the deltas of the meltwater rivers that flowed into the glacial lakes. The majority of the reserve is covered with sands deposited in these deltas.

Prevailing northwest winds worked the sands into transverse and parabolic sand dunes. Rapidly rising water tables are thought to have aided in the quick stabilization of the dunes by colonizing vegetation (David 1977). This unusual speed of stabilization resulted in the formation of one of the best examples of transverse dunes in Canada.

The transverse dunes, mostly trending northeast/southwest, are the main landform feature in the reserve and make up most of the reserve landscape. These dunes are up to 15 to 20 meters in height and up to five kilometers in length. Sedge wetlands occur in the depressions between the dunes.

3.3.2 Soils

In this area, the sandy parent material has had a strong influence on soil development. Sands are frequently distributed by wind and water erosion and consequently soil development is limited in the area.

Most of the sand dune area is covered with Brunisolic soils, which are generally rapidly to imperfectly drained soils that occur under forest stands. The sedge fens and other wetlands are covered with organic accumulations of sedge

peat. Some Regosols, which are weakly developed because they are subject to erosion or flooding, occur along the minor streambed in the south of the reserve.

3.3.3 Climate

The climate of the area is characterized by relatively short, warm summers and cold winters. Proximity to the Athabasca River valley may contribute to lower than average temperatures for this region. Microclimates on south-facing sand dunes are apparent from rapid changes in vegetation cover and composition compared to surrounding areas.

3.3.4 Aquatic Resources

Several ponds and a small lake occur within the reserve. They commonly have gently sloping shorelines surrounded by marsh vegetation and black spruce forest. Sedge wetlands are common in the lowlands between the dunes.

A marl fen, which is a fen on calcium rich soils, occurs in the northwest section of the reserve. Vegetation associated with these soils, such as sticky false asphodel (*tofieldia glutinosa*), may be present.

3.3.5 Vegetation

The vegetation in the reserve is representative of a boreal forest in the central mixedwood subregion. It includes vegetation communities typically dominated by jack pine or by aspen. Some white spruce occurs along the minor streambeds, and black spruce, tamaracks and grasses dominate the wetlands. The major disturbance is fire; the last major fire burned the area in 1944.

Several forest community types have been described in a biophysical inventory of the area².

- The *dry pine community type* is widespread throughout the reserve, but occurs most extensively in the northwestern section of

the reserve on south and west exposures of the sand dunes. Understory in the dry jack pine stands include green alder, blueberry, bearberry, saskatoon, buffalo-berry, northern bedstraw, vetch, rice grass and lichens.

- *Mesic pine communities* (with an intermediate amount of moisture, neither wet nor dry) often occur adjacent to the drier pine communities if soil moisture is more available, for instance in slight depressions and on the cooler northern aspects of dunes. The understory typically includes green alder, bog cranberry, twinflower and feathermoss. This community differs from the dry pine type in several ways: the canopy is better developed; bearberry and lichen have been replaced by bog cranberry, twinflower and feathermoss; and green alder forms a significant component of the understory.
- *Pine/aspen communities* occur under environmental conditions similar to the moister pine communities, and have a similar understory. The presence of aspen may indicate an earlier phase of a pine-dominant community. This community is not as extensive as the pine communities, occurring mainly in the eastern half of the reserve.
- *Aspen communities* are primarily in the southwest section of the reserve, but small areas often occur adjacent to pine/aspen communities. The overstory is typically composed of aspen stands with scattered jack pine, white spruce and paper birch. The understory is typically green alder, with sarsaparilla, bearberry, and grasses, mosses and lichens.
- *White spruce* is rare in the reserve. Some is present with aspen along a minor stream course in the extreme southwest corner, and another stand is present close to the northern boundary.
- *Black spruce/tamarack community types* occur in wet, poorly drained depressions. They are present in the southern portion of the reserve.
- *Sedge-dominated fens* are common in wet depressions between the transverse dunes. The species diversity is relatively low, with

² The Holmes Crossing Proposed Natural Area Biophysical Inventory (1989) describes 14 forest community types in an area which includes the Forest Land Use Zone to the east, and land to the Athabasca River to the north. Not all these community types are present in the ecological reserve

only tamarack, sedges and moss. Areas of standing water are typical.

3.3.6 Wildlife

The diverse landforms and associated vegetation create varied habitats for wildlife. Some of the common wildlife species include black bear, coyote, moose, white-tailed and mule deer, red squirrel and beaver. A variety of hawks, woodpeckers, and migratory songbirds also inhabit the area. Sandhill cranes have been seen in the dunes.

3.3.7 Archaeological/Historical

Fort Assiniboine became one of the first settlements in the region with the establishment of a North West Company trading post in 1795. The post served as a junction for a number of overland trails and the end of a long portage from Edmonton. When the trading post was abandoned in 1859, the trails continued to be used by settlers and people travelling north. The trail from Edmonton to Fort Assiniboine and beyond was part of the overland route to the Klondike in the Yukon, and became known as the Klondike Trail.

Settlement in the area increased substantially after the turn of the century and several new communities sprang up. Barrhead, about 30 kilometers south of the reserve, was founded in 1912, and has since become a major farm and trading center in the region.

3.4 Land Uses in the Reserve

3.4.1 Past Land Use

The reserve site has had some use in the past. Several seismic cuts and two abandoned well sites are evidence of former oil and gas activity. One abandoned well site is on the east boundary, and another is in the central area. A pipeline angles past the southwest corner of the reserve. No commercial logging or cultivation has occurred in the reserve.

The site was previously in a Registered Fur Management Area, but because trapping is no longer allowed in the reserve, the trapline holder

has been compensated with additional crown land outside the reserve boundary.

Prior to designation, recreationists from the local area and as far away as Edmonton used the site, sometimes as many as 200 people on a weekend. Activities included off-highway vehicle use (both snowmobiles and ATVs), hunting, trail riding, hiking, camping, and day use activities such as picnicking and berry picking. The main trails were passable by highway vehicles, and so the area contained at least nine informal interior campsites accessible to vehicles. The two small lakes were also accessible by vehicle, and were used by canoeists and in one case by a model float plane enthusiast.

Disturbance from these recreational activities occurred mainly on the trails in the western portion of the reserve, and is not widespread.

3.4.2 Current Dispositions

There are no surface dispositions in the reserve. A pipeline crosses outside the southwest corner of the park, and some oil and gas activity occurs on the crown land north of the county road.

4.0 Management Issues

Many management issues were resolved during the process that led to establishment of the reserve in 1997. These issues included:

- boundaries;
- compatible activities; and
- amount of development.

Those issues that remain are primarily:

- protection of the dunes;
- restoration of some areas;
- development and maintenance of the trail system; and
- public information.

These issues are addressed in the next section.

5. Objectives and Management Guidelines

This section outlines how the site will be managed to ensure the objectives for the reserve are achieved.

The objectives and guidelines are divided into sections only for convenience. On-going management must be holistic and management issues should be addressed from an ecosystem management perspective. In general, the main philosophy of management in the reserve is to let nature take its course without human interference. Management of the reserve then becomes primarily management of human impacts from both within and outside of the reserve.

In keeping with the “hands off” philosophy of ecological reserve management, any management actions should only be those that are necessary, and should be carried out with minimum impact to the reserve.

5.1 Preservation

Preservation is the main objective of the ecological reserve.

5.1.1 Geological/Soil Resources

Objectives

- To maintain the stabilized transverse sand dunes in a natural state

Management Guidelines

The transverse sand dunes are stabilized because of soil development and vegetation cover. This stability must be maintained in order to preserve them. No human activity will be allowed in the transverse dune area that would damage the soil and vegetation cover, and thus undermine the stability of the dunes.

Natural processes such as weathering and erosion by wind, water and ice will normally continue without interference. Events such as

flooding, drought, and windstorms are part of the natural disturbance regime.

Some trails have hummocks created from OHV use. These will be returned to natural contouring.

An old cabin, probably used by trappers, was built into a sandbank about in the center of the reserve between two small lakes. The cabin has long been abandoned, but the site still has remnants of the log walls of the cabin. There are also metal pieces such as an old bed frame, spikes, some glass and other debris that could be hazardous to visitors. The non-biodegradable hazardous items will be removed, and the wood remnants of the cabin left to degrade naturally.

5.1.2 Aquatic Resources

Objectives

- To maintain the undisturbed character of the lakes
- To protect the sedge wetlands which are of local significance
- To protect the marl fen which is of regional significance

Management Guidelines

The lakes will be monitored at minimum twice a year by visual inspection. The monitor will particularly note changes in water levels and disturbances to the shorelines.

The marl fen, because of its significance, will be monitored regularly.

The trails in the reserve that go through wet areas will be closed or re-routed to drier areas.

5.1.3 Vegetation

Objectives

- To identify the vegetation communities and rare/uncommon species in the reserve

- To maintain the natural ecological diversity and ecological processes within these vegetation communities.

Management Guidelines

An update of the 1989 biophysical inventory of the vegetation in the reserve will be conducted. This inventory will include a description of plant communities and an identification of rare plants and their habitats.

Based on the biophysical inventory, a vegetation management plan will be prepared that contains:

- objectives and guidelines for maintaining the natural diversity of the plant communities, in particular the jack pine forests;
- actions for maintaining rare and uncommon plant species;
- recommendation of indicators for monitoring vegetation communities in the reserve;
- investigation of the role of wildfire in the maintenance of the vegetation communities in the reserve;
- use of prescribed fire as a substitute for wildfire disturbance; and
- the management of disease and pests in maintaining natural diversity.

Non-native species will not be introduced into the reserve. Any that exist there now will be controlled by preferably mechanical or biological control methods, and removed if possible. Herbicides will be used only if other control methods are unsuccessful.

In general, forest insects and diseases are natural processes of a boreal forest. If they are of concern to adjacent forest areas, Land and Forest Service will evaluate the threat and take appropriate action.

Some areas, for instance former OHV trails, may be closed and allowed to rejuvenate naturally. If replanting is necessary on these sites, only native species will be used, and in particular those adaptable to the sand dune landscape in the reserve.

Many of the campsites used previously by recreationists have grown over and are barely visible. They will be allowed to continue to re-vegetate naturally.

All these sites will be monitored for their success at re-vegetating. If re-vegetation is not occurring, native grasses and plants will be seeded in the sites.

5.1.4 Wildfire

Wildfires are a natural disturbance in the boreal forest, and facilitate forest renewal. For instance, jack pine forests grow on dry sites and are susceptible to intensive fires. But even as a fire kills a mature stand of jack pine, it opens the seed cones, allowing the species to reproduce and survive.

Due to the relatively small land base of the ecological reserve (22 km²), wildfires are too great a risk to forest and recreation values both in and outside the reserve, and they will be suppressed.

However, suppression of fire in the reserve is a concern because it removes a natural process that promotes forest renewal. The use of prescribed fire, along with other methods of renewal, will be addressed in the vegetation management plan.

Objectives

- To develop a fire management strategy for the reserve

Management Guidelines

A Fire Management Strategy will be prepared with Land and Forest Service for Holmes Crossing Sandhills Ecological Reserve, Holmes Crossing Forest Land Use Zone, and the crown land to the north and west of the reserve.

The strategy will include:

- a fire history of the area;
- an assessment of fuel types;
- climatic and meteorological characteristics;

- maps of terrain features, including locations of rare species that should not be disturbed by fire crews;
- potential fire behavior and constraints; and
- environmentally sensitive fire-fighting techniques and equipment that will leave the least impact on the reserve.

Land and Forest Service is responsible for fire suppression in the reserve and the surrounding land.

5.1.5 Wildlife

Objectives

- To maintain viable populations of wildlife native to the reserve.

Management Guidelines

The natural processes in the reserve shape the habitat for the wildlife native to the reserve. A need to manipulate habitats in order to maintain specific species of wildlife is not anticipated at this point.

Bears are present, and visitors should be aware of possible encounters with them. Any bear problems should be reported to Natural Resources Service.

Beavers are active in the reserve and will generally not be interfered with. If their activity threatens to damage a trail, an alternate route for the trail will be investigated before other methods of managing the beaver are considered.

Hunting and trapping are not allowed in the reserve. A trapline that was inside the reserve has been reallocated outside the reserve.

There has been no formal inventory of the wildlife found in the reserve. An inventory that includes mammals, birds, reptiles, and amphibians will be undertaken as funds allow. Graduate students may be encouraged to undertake this work.

5.1.6 Historic Resources

No archeological studies have been done in the reserve area. It is recommended that these studies be conducted, particularly along the lakeshores where there may have been aboriginal camps.

5.2 *Heritage Appreciation*

Objectives

- To provide opportunities for unstructured natural heritage appreciation in the reserve.
- To provide information to the public about the natural heritage of the reserve, and its role in Alberta's network of protected areas.
- To provide opportunities for environmental education about the reserve

Management Guidelines

Interpretation

Natural Resources Service will not offer any personal interpretation services, such as guided walks, in the reserve. Other groups or agencies may offer these services, as long as the activity is compatible with the objectives of the reserve.

Signage

Three signs have been installed at the access to the reserve--a map of the entire Athabasca Sandhills area, a description of the five established areas, and a description of the ecological reserve.

Boundary signs indicating "Ecological Reserve/Foot Traffic Only" have been installed along the county road. Signs indicating "no bikes, quads, 4x4's, snowmobiles" have also been installed along the county road. "Foot Traffic Only" has been added to these signs to make the prohibition of vehicles in the reserve more explicit.

Further signage, such as trail signage, will be minimal and in keeping with the nature of the reserve.

Public Information

A kiosk will be set up in the staging area to provide information about the reserve and an orientation to its hiking trails and special features.

An aerial view gives a different perspective of the dunes than from the ground, and perhaps a better opportunity to appreciate their uniqueness. Installation of an aerial photograph at the kiosk will be investigated.

A brochure explaining the unique features of the reserve will be produced. Partnerships and/or sponsors will be sought to help with funding and development of the brochure.

5.3 *Outdoor Recreation/Tourism*

Objectives

- To not place a high priority on outdoor recreation and tourism in the ecological reserve.
- To allow only low-impact activities which are conducted on foot.

Management Guidelines

Appropriate Activities

Previous to designation, the area was used for recreational motorized activity, equestrian use, and hunting and trapping. With the ecological reserve designation, recreation is no longer a main emphasis of the area, and these relatively high-impact activities are no longer allowed.

Low-impact day use activities using foot access are appropriate activities in the reserve. These include hiking, cross-country skiing, berry picking, picnicking, photography, and bird watching.

Since recreation is not a main objective of the ecological reserve, facilities will be kept to a minimum.

In the adjacent Forest Land Use Zone, trailriding in summer and snowmobiling in winter is allowed. These activities are not allowed in the ecological reserve. These two areas share a common boundary that will be well marked so that users can easily locate which area they are in, and act accordingly.

Visitors are not allowed to stay overnight in the reserve, and no open fires are allowed. Those interested in camping and other outdoor recreational areas will be directed to appropriate locations.

Access

The Holmes Crossing Staging Area will be developed at the trailhead off the county road (SA1 on Trail map). A vault toilet will be installed at the staging area if the amount of use in the reserve makes it necessary, but arrangements for its maintenance will have to be resolved before it is installed.

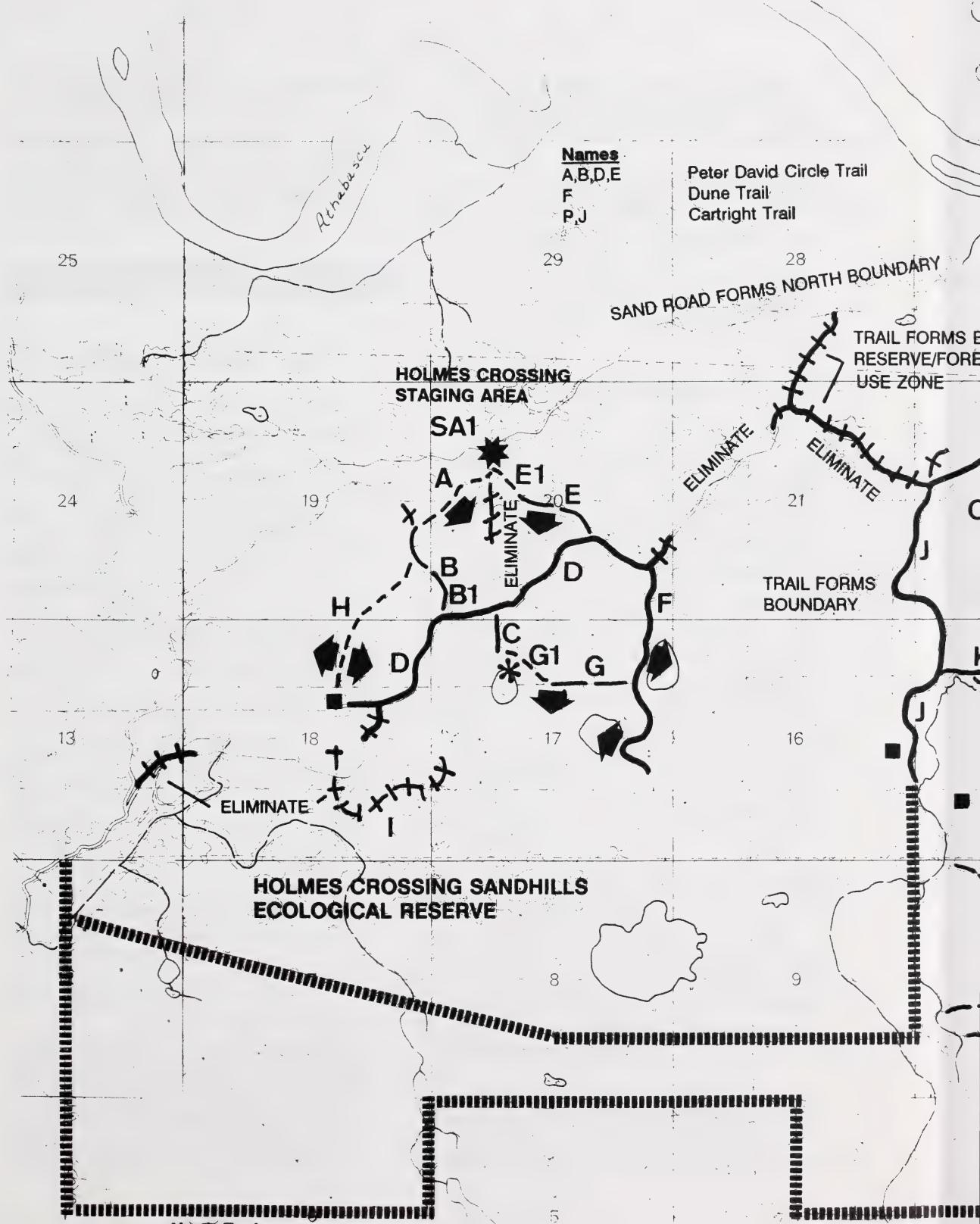
Trails

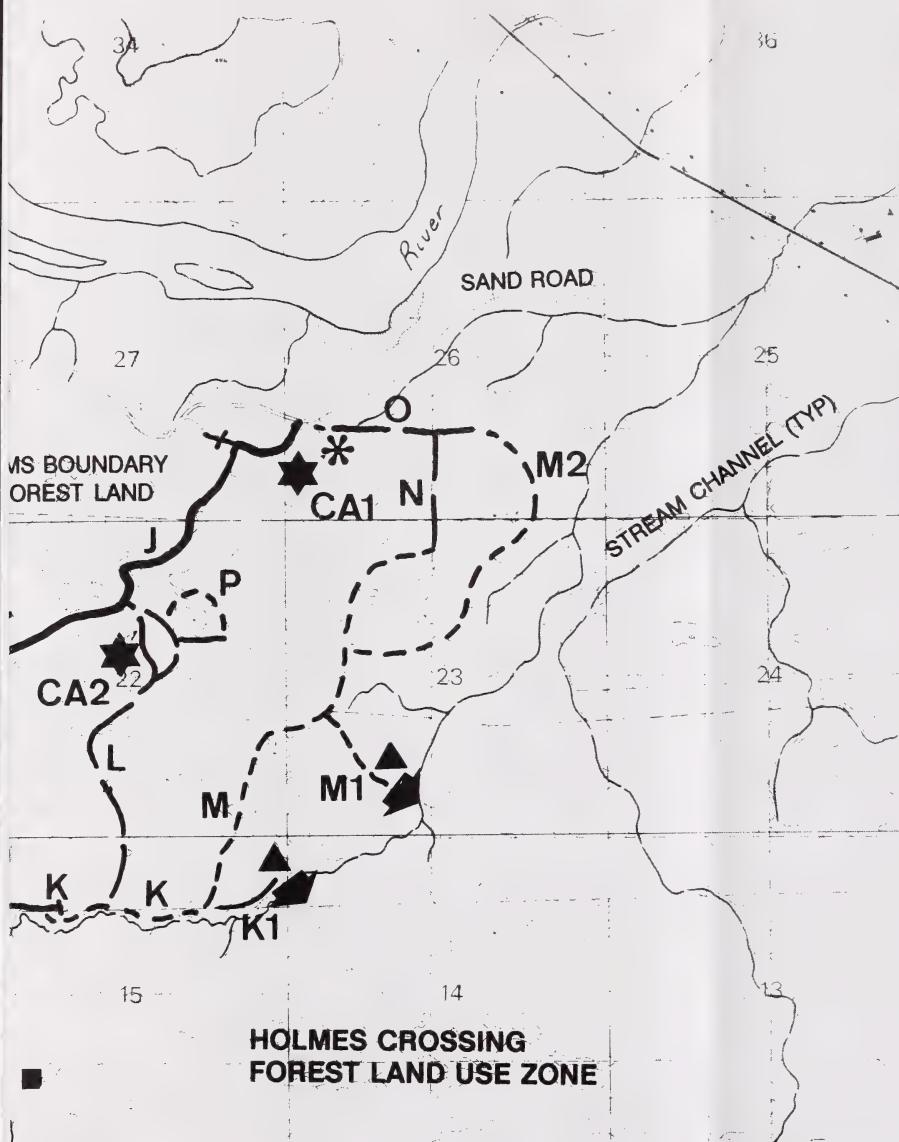
A loop trail system will be developed in the reserve. It will be based on the following guidelines.

- The trail system will make use of existing trails. New trails will only be developed to create loops with existing trails.
- The trails in the ecological reserve will not connect with the multi-use trails in the forest land use zone.
- Several existing trails that begin at the county road will be closed and rejuvenated. This is to encourage use of only one access, and to concentrate use on designated loop trails.
- The trails will include viewpoints and signs that will point out special features. In keeping with the nature of the reserve, signage will be kept to a minimum and will be unobtrusive.

Minimum trail maintenance will be carried out to keep the trails useable. This includes cutting of underbrush, overhanging limbs, etc.

Hummocks have been created on the main trail from former OHV use. The trail has been





HOLMES CROSSING FOREST LAND USE ZONE

Access

1. Day parking at CA1 and SA1.
2. Vehicle access/camping at CA2.
3. No vehicles beyond CA2.
4. Eliminate old cutlines/minor trails in Ecological Reserve.
5. Forest Land Use Zone - abandon cutlines, usage will occur in dry years.

LEGEND

- ||||| BOUNDARY
- - - EXIST. TRAIL
- EXIST. WAGON ROAD
- - - NEW TRAIL



VIEW



ABAND. DRILL SITE



PICNIC SITE



WET AREA ON TRAIL

- A CONSTRUCT 2.5M CLEARED TRAIL.
- B ABANDONED ROAD. MINOR CLEARING REQ'D. REROUTE AT B1 TO VIEW.
- C EXIST. CUT LINE TO VIEW - RETAIN.
- D REGRADE EDGES. ELIMINATE AS SHOWN.
- E EXIST. TRAIL. CONSTRUCT 2.5M CLEARED TRAIL AT E1 TO COMPLETE LOOP.
- F GRADE EDGES.
- G CUTLINE. CONSTRUCT 2.5M CLEARED TRAIL AT G1. REQUIRES 25M FLOATING BOARDWALK. TO COMPLETE LOOP. LOW PRIORITY.
- H CONSTRUCT 2.5M CLEARED TRAIL.
- I ABANDON.
- J REGRADE EDGES.
- K GRADE SLIDESLOPE CONNECT AT J. ELIMINATE CUTLINE AND CONSTRUCT 2.5M CLEARED TRAIL AT TOP OF STREAM BANK - BETTER DRAINAGE.
- L K1 - NO WORK, EXCELLENT VIEW.
- M REGRADE NORTH HALF.
- N CONSTRUCT 2.5M CLEARED TRAIL. M1 - TO VIEWPOINT. M2 - LOOP ALTERNATIVE.
- O EXIST. CUTLINE - MINOR CLEARING.
- P EXIST. CUTLINE - CLEARING REQUIRED.
- Q FILL/GRADE WET AREA NEAR CAMPGROUND.
- R CONSTRUCT 2.5M CLEARED HIKING TRAIL.
- S PULLOFF/INTERPRETATION (INTRODUCTION)
- T PULLOFF/INTERPRETATION (INTRODUCTION)
- U STAGING AREA - HIKING ONLY (PARKING, PICNIC TABLES, INTERPRETATION, PRIVY)
- V UPGRADE CAMPING (PARKING, INFORMAL CAMPING, PRIVY, WELL, HITCHING RAILS).
- W UPGRADE CAMPING (PARKING, INFORMAL CAMPING, HITCHING RAILS)

MOST TRAILS REQUIRE MINIMAL CLEARING AND/OR GRADING. CLEARING/GRADING REQUIREMENTS SHOWN ABOVE INDICATE MORE EXTENSIVE WORK.

('ABANDON' - NO MAINTENANCE)

('ELIMINATE' - BLOCK ENDS, REHABILITATE)

('CLEARED TRAIL' - CLEARING/NO GRADING)

Overall Concept

1. Separation of hiking trails in Reserve from multi-use trails in Forest L.U.Z..

Miscellaneous Facilities:

1. Provide well at CA1.
2. Allow pumping from slough at CA2.
3. Direction signage at intersections
4. Interpretation signage in Reserve.
5. Direction/interp. signage at SA1, CA1

Alberta
ENVIRONMENTAL PROTECTION

HOLMES CROSSING SANDHILLS ECOLOGICAL RESERVE

HOLMES CROSSING FOREST LAND USE ZONE

TRAILS MASTER PLAN

0 0.5 1.0 Km.

0 1/4 1/2 Mi.

SCALE



leveled and scarified for improved regeneration of vegetation, and for easier walking.

Some of the trails in the reserve have been given names, and will be signed as such. The circle trail is named after Peter David, the geologist who first identified the significance of the dunes in the reserve.

6.0 Surrounding Lands

6.1 Surrounding Land Use

Land West and North of County Road

The land from the county road west and north to the Athabasca River is crown land, with the exception of a parcel of private land close to the river. There is some oil and gas development in this area, and a pipeline runs through the extreme southern end of this area. Some OHV and equestrian trails exist, and some random camping occurs.

The area will be patrolled periodically by Natural Resources Service, and regulations on use of crown land enforced if necessary.

Land East and South of the Reserve

The Holmes Crossing Forest Land Use Zone (FLUZ) abuts the east and south boundaries of the reserve. The FLUZ acts as a buffer zone for the reserve by shielding it from land use that is incompatible with the reserve, for instance grazing and agricultural use to the south. The FLUZ also accommodates recreational activity, such as equestrian use, which is not allowed in the reserve. A management plan has been prepared for the FLUZ that discusses its protection and use.

6.2 Buffer Zones

Buffer zones on surrounding crown lands can help to manage and protect the overall integrity of an ecological reserve. Buffer zones can be formally designated through the Wilderness Areas, Ecological Reserves and Natural Areas Act to prohibit strip mining, quarrying, and

water development. The need for legislated buffer zones can be alleviated through the cooperation and good will of industry and other land users.

In the case of Holmes Crossing Sandhills Ecological Reserve, there is no need for a legislated buffer zone. The crown land and the Forest Land Use Zone act as buffers to the reserve. Land and Forest Service are the land managers of these surrounding lands, and are committed to protection of the reserve.

6.3 Regional Coordination

Establishment of an area as an ecological reserve does not, in itself, guarantee its protection. Such areas are rarely self-contained ecological units that can be isolated and maintained in a pristine condition. Therefore it is important to foster cooperation with the users of surrounding lands so that the reserve's values can be protected.

Holmes Crossing Sandhills Ecological Reserve was established as one of five areas to accommodate recreational use and protection of the area. The success of meeting the objectives of this reserve depends in part on the success of the other four areas, and in particular the Forest Land Use Zone. Natural Resources Service will work with the other agencies and land owners to coordinate protection of the ecological reserve, as well as the provision of low-impact recreation opportunities.

Land and Forest Service is the land manager for the crown land surrounding the reserve, and they will process all applications for its use and development. Approval of these applications will take into consideration their impact on the reserve. For instance, any approval of applications for logging on adjacent crown land should consider the effects of clear cutting adjacent to the reserve.

At this point the land uses around the reserve do not pose a threat to resources within the reserve. There is no logging adjacent to the reserve. Drilling occurs to the northwest, and directional

drilling under the reserve is permissible. Care will be taken to ensure that activities close to the boundary impact the reserve as little as possible.

7.0 Research and Monitoring

7.1 Research

Research activities that add to the understanding of the sand dunes and associated vegetation and wildlife will be encouraged and accommodated in the reserve.

Any research should not affect the natural processes in the reserve.

Research activities will be administered under existing policies and procedures as outlined in the brochure *Research and Collection Activities in Ecological Reserves*, Alberta Environmental Protection. Applications for research will be reviewed by Alberta Environmental Protection, and permits will be issued by them.

7.2 Monitoring

Monitoring is a systematic way of detecting change in the environment. Monitoring in ecological reserves can be particularly valuable, as the reserve can be used as a “baseline” or “control” area to which changes outside the reserve can be compared. This is because changes in the reserve may be different, or occur at different rates, than changes in other landscapes that are more modified by humans.

A monitoring plan has the following components:

- Identify natural and social factors in the reserve which need monitoring;
- Select indicators for each of the factors that will measure changes over time;
- Develop standards in the indicators; and
- Identify management actions that can be taken if these limits are being exceeded.

Natural and Social Factors

Broad natural and social factors that are tied to park objectives should be chosen for monitoring. For Holmes Crossing Sandhills Ecological Reserve, the natural factors will focus on the significant features such as the sand dunes, the sedge fens, the marl fen, the rare and uncommon plant species and communities, and on the natural themes represented in the park. Monitoring of social factors may be a low priority for the reserve since outdoor recreation is a low priority.

Indicators

Since there is not the time or resources to measure everything, indicators of each of these factors may be selected, based on their ease of repeated measurement and their ability to provide an early warning of change. For instance, indicators of destabilization of the transverse sand dunes could be selected.

Sources of indicators could come from scientific literature, from research conducted in the reserve, and from local people and Alberta Environmental Protection staff who have knowledge of the area. Information from the updated vegetation study and the vegetation management plan could be used to select appropriate indicators.

Standards

A standard is the minimum acceptable condition for each indicator. A standard should be identified for each indicator, and if reached can act as a flag for management action.

It may be difficult to establish standards at this time for many of the indicators if there is no baseline information for them. Monitoring will build up a database, and standards can be determined later.

Potential Management Actions

An indicator that reaches or surpasses its standard, or even establishes a trend, can act as a flag for management action. The monitoring plan will identify possible actions that would be appropriate should this happen. These actions should be non-intrusive if possible, in keeping with the intent of the reserve.

A monitoring program should be adaptive to changes in the natural environment of the reserve. It should also consider the effectiveness of management actions and adapt accordingly. The selection of factors, their indicators, and standards will be based on present best information, but with experience and more knowledge, better factors and indicators may be found, and standards modified.

Management Actions

A monitoring program for the ecological reserve will be prepared and carried out by Natural Resources Service.

In order to monitor change, baseline data is needed. A biophysical inventory of the reserve area, concentrating on vegetation communities, was prepared in 1989. A new vegetation study will be conducted to update the 1989 inventory and identify rare or uncommon vegetation species and communities. A wildlife and bird inventory will also be conducted. This information can be used as baseline data.

Use of volunteer stewards to assist with the monitoring program will be encouraged.

8.0 Program Support

8.1 Roles and Responsibilities

The ecological reserve is the responsibility of Alberta Environmental Protection, Natural Resources Service. Land and Forest Service is responsible for the management of the Forest Land Use Zone and for the crown land which surrounds the reserve. Natural Resources Service and Land and Forest Service will continue to work together to ensure the integrity of the reserve.

The local Natural Resources Service contact for the reserve will be the Ranger in Charge at Fort Assiniboine Sandhills Wildland Provincial Park.

8.2 Regulations and Enforcement

Natural Resources Service will have the primary responsibility for enforcing the regulations in the reserve. However, Land and Forest Service and RCMP also have the authority to enforce reserve regulations.

The greatest emphasis in managing public use will be helping the public to understand and appreciate the reserve through education. Natural Resources Service recognizes that because of the changes in allowed activities, there will be a transition period before the public will be aware of the new regulations. Staff will educate users of the new regulations through personal contact and through signs and brochures. The help and support of local users to educate the public will be invaluable.

Illegal activities should be reported to the Ranger-in-Charge, Fort Assiniboine Sandhills Wildland Provincial Park.

8.3 Volunteers

Volunteers will be encouraged to actively participate in the stewardship of the reserve. Members of the local community, as well as local organizations, have expressed an interest in the protection of the site, and will be encouraged to participate.

Potential areas of participation are:

- clean-up days
- trail maintenance
- weed control
- information presentation/interpretation
- monitoring

9.0 Plan Implementation

9.1 Tasks Identified in the Plan

The following is a list of tasks identified in the plan, and proposed schedule for accomplishing them. They are sorted by target date of

completion. Meeting this target will depend on available funding.

Actions	Target Date
Cleanup debris in the reserve	Spring 1998
Close trails for restoration	Spring 1998
Initiate stewardship involvement in the reserve	Summer 1998
Sign boundary, particularly between FLUZ and reserve	Spring 1998
Build information kiosk	Summer 1998
Prepare brochure	Summer 1999
Prepare and install aerial mosaic at kiosk	Summer 1999
Investigate feasibility of archaeological studies	Fall 1999
Prepare biophysical inventory of vegetation communities and rare/uncommon species	Summer/Fall 1998
Prepare vegetation management plan, including fire management strategy and disease/insect strategy	Winter 1999
Prepare bird and animal inventories	Summer 1999
Prepare monitoring program	Winter 2000

9.3 "State of the Reserve" Report

Alberta Environmental Protection will prepare an annual "State of the Reserve" Report. The report will outline the condition of the reserve, projects or activities that have occurred on the reserve, and public visitation.

Information from the monitoring program will be compiled so that it can contribute to this report.

The report will be submitted by the end of each February to the Chair of the Ecological Reserves Steering Committee.

9.2 Plan Review

This plan will be reviewed not later than 10 years from date of approval. A review can be initiated sooner if warranted. For instance, monitoring may reveal the need for amended management strategies.

Natural Resources Service will initiate the review of this plan. Members of the local groups and agencies who helped in its preparation will be asked to participate in the review. The general public will also be invited to review the amended plan.

The review will focus on the objectives and management guidelines outlined in this plan. Issues that arise subsequent to approval of this plan will be addressed in the review. Other sections of the plan may need updating to reflect the current situation.

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Appendix A

Explanation of Significance Rating

The natural values in the ecological reserve are rated for their significance and for their status as special or representative. Levels of significance are rated as follows (Eagles 1984):

National - features limited in distribution at a national level or which are the best or only representatives in Canada.

Provincial - features limited in distribution at a provincial level or which are the best examples of a feature in Alberta.

Regional - features limited in distribution at a regional level or which are the best examples of a feature in the region.

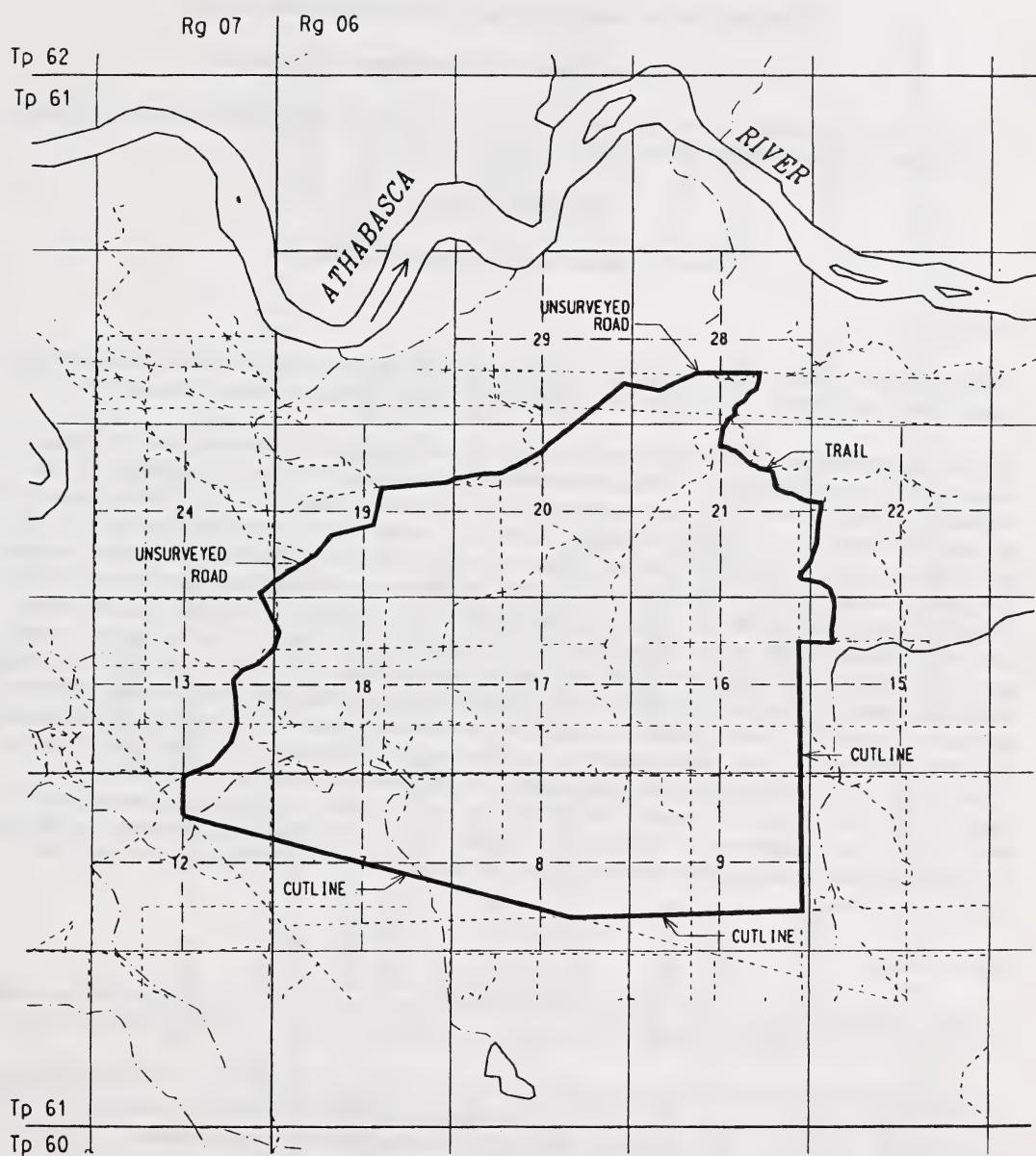
Local - features limited in distribution at a local level or which are the best examples of a feature locally.

Explanation of Representative or Special Rating

Representative features are those which are considered typical of the Central Mixedwood Subregion of the Boreal Forest Natural Region. Level 1 and Level 2 Themes in the chart under Section 2.2 are typical of this subregion.

Special features can include the following categories:

- Excellent or "classic" examples of geomorphic features;
- Rare or unusual physical or biological features;
- Areas of exceptional biological diversity;
- Important faunal habitats; and
- Areas particularly sensitive to disturbance



ECOLOGICAL RESERVE BOUNDARY SHOWN THUS

Area 1982.654 Ha 4899.07 Ac.	DEPARTMENT OF ENVIRONMENTAL PROTECTION Recreation and Protected Areas Division	Scale 1:54 000
O.C. Number	PLAN SHOWING HOLMES CROSSING SANDHILLS ECOLOGICAL RESERVE IN PARTS TWP. 61, RGEN 6-7, WEST OF THE 5TH MERIDIAN	Date Oct. 9, 1996
Graphic File HOLMESS4		Drawn by LAC
Remarks From 1:250 000 Digital Data, 1996	PLAN No. P0356 GEN.	

Wilderness Areas, Ecological Reserve and Natural Areas Act

Holmes Crossing Sandhills Ecological Reserve Regulation

1. The land in the attached Schedule of Lands is hereby designated as an ecological reserve to be known as Holmes Crossing Sandhills Ecological Reserve.

Schedule of Lands

Holmes Crossing Sandhills Ecological Reserve

FIRSTLY:

All those parcels or tracts of land, situate, lying and being in the sixty-first (61) township, in the sixth (6) range, west of the fifth (5) meridian, in the Province of Alberta, Canada, and being composed of:

The north half of section eight (8), the north west quarter of section nine (9), the west half of section of sixteen (16), section seventeen (17), the south half and north east quarter of section eighteen (18), the south half of section twenty (20), the south west quarter of section twenty-one (21), all those portions of the north half and south east quarter of section seven (7), the south half of the said section eight (8), the south half and north east quarter of the said section nine (9) and the east half of the said section sixteen (16) lying generally to the north and west of cut-lines, all that portion of the north west quarter of section fifteen (15) lying to the north of a cut-line and generally to the west of a trail, all those portions of the west half of section twenty-two(22) and the north half and south east quarter of the said section twenty-one (21) lying generally to the west of the said trail, all those portions of the north west quarter of the said section eighteen (18), the south half and north east quarter of section nineteen (19), the north half of the said section twenty (20) and the south east quarter of section twenty-nine (29) lying generally to the south east of the southeasterly limit of an unsurveyed roadway and all that portion of the south half of section twenty-eight (28) of the said township lying generally to the south of the southerly limit of the said roadway and to the west of the westerly limit of the said trail, as shown upon a map or plan of record in the Department of Environmental Protection at Edmonton as No. P0365 General, containing one thousand eight hundred ninety-nine and five hundred eighty-five thousandths (1,899.585) hectares (4,6093.81 acres), more or less.

SECONDLY:

All those parcels or tracts of land , situate, lying and being in the sixty-first (61) township, in the seventh (7) range, west of the fifth (5) meridian, in the Province of Alberta, Canada, and being composed of:

All that portion of the north east quarter of section twelve (12) which lies generally to the north of a cut-line and to the south east of the said roadway and all those portions of the east half of section thirteen (13) and the south east quarter of section twenty-four (24) of the said township lying generally to the south east of the southeasterly limit of the said roadway, as shown upon the said map or plan No. P0356 General, containing eighty-three and sixty-nine thousandths (83.069) hectares, (205.26), more or less.

The lands herein described contain one thousand nine hundred eighty-two and six hundred fifty-four thousandths (1,982.654) hectares (4, 899.07 acres), more or less.

Appendix C

Permitted Activities in Athabasca Sandhills Protected Areas

	Holmes Crossing Ecological Reserve	Holmes Crossing Forest Land Use Zone	Fort Assiniboine Wildland Park	Vega Natural Area	Timneu Off-Highway Vehicle Recreation Area
Hunting	Not permitted	Permitted	Permitted	Permitted	Permitted
Trapping	Not permitted	Permitted	Permitted	Permitted	Permitted
Snowmobiling	Not permitted	Permitted on designated trails	Permitted on designated trail only	Not permitted	Not permitted
ATV Use	Not permitted	Not permitted	Not permitted	Not permitted	Permitted
Hiking	Permitted	Permitted	Permitted	Permitted	Permitted
Equestrian Use	Not permitted	Permitted	Permitted	Not permitted	Permitted
Camping	Not permitted	Permitted in staging area/campgrounds only	Random camping* permitted. Car camping not permitted in staging area	Not permitted	Staging area camping and random camping permitted.
Geophysical Exploration	Not permitted	Permitted	Allowed only for existing commitments	Not permitted	Permitted
Oil/Gas Development	Not permitted	Permitted	Allowed only on leases that pre-exist park establishment	Not permitted	Permitted
Logging	Not permitted	Permitted	Not permitted	Not permitted	Permitted

*Random Camping - an undesigned area used for camping other than the staging area. In the wildland park random camping must be at least one kilometer from the staging area. The intent is to disperse the impacts of camping, and to provide the opportunity for primitive camping experiences.

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